



## **JEFFERSON RIVER DRAINAGE**

### **PHYSICAL DESCRIPTION**

The Jefferson River flows for 84 miles from its origin at the junction of the Big Hole and Beaverhead rivers to its mouth at Three Forks, Montana where it joins the Madison and Gallatin rivers to form the Missouri River. Much of the Jefferson River is braided, particularly in the area near Three Forks where many islands and side channels exist. During the irrigation season, virtually all of the tributaries to the Jefferson are diverted before reaching the river. The Boulder River is the only tributary to contribute a significant volume of flow during the high-water period.

### **FISHERIES MANAGEMENT**

The Jefferson River basin contains fish species common to Southwestern Montana. These species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat trout, westslope cutthroat trout (primarily in isolated tributaries), mountain whitefish, common carp, longnose dace, longnose sucker, Rocky Mountain sculpin, mountain sucker, and white sucker. Northern pike were detected in the Jefferson River in the 2000s.

The sport fishery of the Jefferson River is primarily comprised of brown and rainbow trout. Current trout density in the upper river is approximately 600 trout per mile in the upper 40 miles of the river, and less than 300 trout per mile in the lower 40 miles of the Jefferson River. Trout abundance is closely associated with streamflow levels, with significant declines in fish populations occurring during drought cycles (late 1980s and 2000-2007), and documented recoveries during recent years of near normal streamflow. The goal of habitat and flow restoration projects in the Jefferson River and associated tributaries is to sustain 1000 trout per mile in the upper 40 miles and 500 trout per mile in the lower 40 miles of the Jefferson River.

Hell's Canyon Creek, Parson's Slough, Willow Springs, North Boulder River are known to be important tributaries for supporting the wild trout population of the Jefferson River. Pipestone Creek, Whitetail Creek, South Boulder River, Antelope Creek, and Willow Creek have significant flow and sediment delivery issues impairing current values for supporting the Jefferson River fishery. Fish Creek, Mill Creek, Halfway Creek, and Whitetail Creek contain conservation populations of Westslope Cutthroat Trout (See draft version of *Status and Conservation Needs for Westslope Cutthroat Trout in Southwest Montana*. FWP, 2011).

Fish stocking records for the Jefferson River are documented to begin in the 1920s and continue through the early 1970s when wild trout management philosophies were instituted. Historically stocked species in the Jefferson River included: rainbow trout, brown trout, cutthroat trout (undesignated), and bass. In 1989 and 1990, rainbow trout and brown trout were stocked for the specific purpose of establishing a spawning run into Jefferson River tributaries. Arctic grayling were stocked in 2002 and 2003; however, no natural reproduction was detected through monitoring, and therefore the reintroduction efforts were terminated.

The Jefferson River is open to angling during the entire year. In the upper portion of the Jefferson River (origin to Williams Bridge FAS) brown trout harvest is limited to three daily and in possession, only 1 over 18 inches, with catch and release only for rainbow trout. These regulations are in place to encourage recovery of fish populations in concert with ongoing habitat conservation activities. Downstream from Williams Bridge FAS, more liberal Central District Standards regulations apply for brown trout with the catch-and-release only regulation maintained for rainbow trout. No limit is imposed on northern pike to help prevent the further establishment of the invading population.

The relationship between drought impacts to trout populations and subsequent angler use are well established for the Jefferson River. Prior to extended drought conditions (initially observed in 1988) angler effort reached 27,456 (1983) angler days. Within the past decade, angler effort in the Jefferson River has varied from 7,000 to nearly 14,000 angler days per year. In other words, during periods of time (years) when flow and temperature conditions are favorable for trout populations, trout densities increase and angler days increase.

Various high mountain lakes and lowland reservoirs exist within the Jefferson River basin. Willow Creek Reservoir, Delmoe Lake, Homestake Lake, Piedmont Pond are coldwater lakes/ponds are stocked annually to provide fishing opportunities.

## **HABITAT**

The mainstem Jefferson River has desirable habitat quality for supporting a sport fishery of brown and rainbow trout during years of average or above average streamflow. Water quantity and quality is severely impaired during drought years when water recedes from structural habitat along the shoreline, and water temperature approaches 80° F. Quality tributaries able to provide suitable trout spawning and rearing habitat are rare.

Over the past 25 years, priority habitat enhancement efforts have focused on flow improvements during summer irrigation, tributary restoration projects to enhance spawning and rearing habitat, and encouraging sound floodplain function practices through permit review processes. Participation in the implementation of the Jefferson River Drought Plan with the Jefferson River Watershed Council and water users has been the primary tool for preventing acute dewatering of the river.

The average width of the river is about 197 feet. The gradient averages 7.3 feet per mile and sinuosity is 1.6. The bottom substrate is primarily gravel-cobble. Heavy depositions of silt occur at some main river sites and in many side channels. FWP determined that the minimum instream flow for fish and other aquatic life for the Jefferson River is 1,100 cfs, based on the upper inflection point of the wetted perimeter (WETP) model.

## **FISHING ACCESS**

Anglers and boaters can launch boats at 11 FASs distributed along the 77 mile reach of the Jefferson River.

## **SPECIAL MANAGEMENT ISSUES**

A drought management plan was developed and approved in July 2000, to attract voluntary participation in meeting stream flow targets in the Jefferson River Basin. This plan was modified in 2012. This plan identifies various flow and temperature targets that once reached initiate conservation measures to benefit the aquatic resources. Considerable work has been completed within the basin to enhance stream flows (e.g., Hell's Canyon Water Lease) and improve spawning conditions (tributary enhancement projects). Future work will look at the potential of flow augmentation from upstream reservoirs (e.g., Ruby and Willow Creek reservoirs) to benefit aquatic resources during times of low flow. Northern pike have become established through an unauthorized introduction in the Missouri headwaters area including parts of the Jefferson River. To address threats of northern pike on trout populations, FWP removed harvest regulations on northern pike throughout the basin in 2011, and initiated removal efforts in 2012.

The Jefferson River drainage is also home to several conservation populations of westslope cutthroat trout providing opportunities to conserve this native species in the drainage. The goal of cutthroat conservation work is to secure populations in habitat that is free from the threats of non-native species and much of this work will be done upstream of natural and man-made fish barriers. A cutthroat trout population is considered secure when it has a minimum population size of 2,500 fish, occupies at least 5-6 miles of stream and is free from the threats of competition and hybridization from non-native species. The long-term goal of cutthroat conservation in the Jefferson is to have 20% of the historically occupied habitat restored to cutthroat trout.

### FISHERIES MANAGEMENT DIRECTIONS FOR JEFFERSON RIVER DRAINAGE

Water	Miles/acres	Species	Origin	Management Type	Management Direction
Jefferson River and Tributaries (Twin Bridges to Cardwell)	40 miles mainstem	Rainbow trout, Brown trout	Wild	Special Regulations	Continue to restrictive harvest to improve trout numbers to recover from drought impacts
		Mountain whitefish	Wild	General	Continue to maintain abundance
Habitat needs and activities: The upper 40 miles of the Jefferson River and associated tributaries have periodic dewatering issues, but the reach has high potential for trout recovery. Activities: improve instream flow conditions and drought plan implementation, improve spawning tributaries, and maintain function of the river channel and floodplain health.					
Jefferson River and Tributaries (Cardwell to Confluence with Madison River)	40 Miles mainstem	Rainbow trout, Brown trout	Wild	Special Regulations	Continue to restrictive harvest to improve trout recovery
		Mountain whitefish	Wild	General	Continue to maintain abundance
Willow Creek Reservoir	713 acres	Rainbow trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth and manage wild brood stock
		Brown trout	Wild	General	Continue to manage fish density through angler harvest to maintain fish growth
Habitat needs and activities: Water Level Management at this DNRC Reservoir					
Delmoe Lake	279 acres	Westslope cutthroat trout	Hatchery	Put- Take	Continue to manage stocking and harvest to maintain fish growth
Habitat needs and activities: Private Reservoir with challenging water level issues. Occasional blue-green algae blooms during late summer.					
Tobacco Root Mountain Lakes	16 lakes and 128 acres	Westslope cutthroat trout	Wild/ Hatchery	General/ Put-Grow-Take	Continue to manage stocking and harvest to maintain fish growth
		Brook trout, Rainbow trout	Wild	General	Continue to manage stocking to maintain fish growth

